

FACT SHEET FOR NPDES PERMIT WA0037478
FACILITY NAME DARIGOLD, INC.-CHEHALIS PLANT
May 2010

PURPOSE of this Fact Sheet

This fact sheet explains and documents the decisions the Department of Ecology (Ecology) made in drafting the proposed National Pollutant Discharge Elimination System (NPDES) permit for **Darigold, Inc. (formerly known as WestFarm Foods) – Chehalis Plant**.

The Environmental Protection Agency (EPA) developed the NPDES permitting program as a tool to “restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.” EPA delegated to Ecology the power and duty to write, issue, and enforce NPDES permits within Washington State. Both state and federal laws require any industrial facility to obtain a permit before discharging waste or chemicals to a water body.

An NPDES permit limits the types and amounts of pollutants the facility may discharge. Those limits are based either on (1) the pollution control or wastewater treatment technology available to the industry, or on (2) the receiving water’s customary beneficial uses. This fact sheet complies with Section 173-220-060 of the Washington Administrative Code (WAC), which requires Ecology to prepare a draft permit *and accompanying fact sheet* for public evaluation before issuing an NPDES permit.

PUBLIC ROLE in the Permit

Ecology makes the draft permit and fact sheet available for public review and comment at least 30 days before issuing the final permit to the facility operator (WAC 173-220-050). Copies of the fact sheet and draft permit **Darigold, Inc. Chehalis Plant**; NPDES permit **WA0037478**, are available for public review and comment from June 4, 2010, until the close of business July 3, 2010. For more details on preparing and filing comments about these documents, please see **Appendix A - Public Involvement**. Before publishing the draft NPDES permit, **Darigold, Inc. Chehalis Plant**, reviewed it for factual accuracy. Ecology corrected any errors or omissions about the facility’s location, product type or production rate, discharges or receiving water, or its history.

After the public comment period closes, Ecology will summarize substantive comments and our responses to them. Ecology will include our summary and responses to comments to this Fact Sheet as **Appendix D - Response to Comments**, and publish it when issuing the final NPDES permit. Ecology will not revise the rest of the fact sheet, but the full document will become part of the legal history contained in the facility’s permit file.

TABLE OF CONTENTS

I.	INTRODUCTION	4
II.	BACKGROUND INFORMATION	4
A.	Facility Description.....	5
	History.....	5
	Industrial Process	6
B.	Permit Status	8
C.	Summary of Compliance with Previous Permit Issued	8
D.	Wastewater Characterization	8
E.	Description of the Receiving Water.....	14
F.	SEPA Compliance	14
III.	PROPOSED PERMIT CONDITIONS	14
A.	Design Criteria.....	15
B.	Technology-Based Effluent Limits.....	15
C.	Water Quality-Based Effluent Limits	18
	Numerical Criteria for the Protection of Aquatic Life and Recreation.....	18
	Numerical Criteria for the Protection of Human Health.....	18
	Narrative Criteria	18
	Antidegradation.....	19
	Mixing Zones	19
D.	Designated Uses and Surface Water Quality Criteria.....	20
E.	Evaluation of Surface Water Quality -Based Effluent Limits for Numeric Criteria	21
F.	Human Health	24
G.	Sediment Quality	24
H.	Ground Water Quality Limits	24
I.	Comparison of Effluent Limits with Limits of the Previous Permit Issued on May 9, 2005-	24
IV.	MONITORING REQUIREMENTS	26
A.	Lab Accreditation.....	26
V.	OTHER PERMIT CONDITIONS	26
A.	Reporting and Recordkeeping.....	26
B.	Non Routine and Unanticipated Discharges	26
C.	Spill Plan.....	27
D.	Solid Waste Control Plan.....	27
E.	Outfall Evaluation	27
F.	Treatment System Operating Plan	27
G.	General Conditions	27
VI.	PERMIT ISSUANCE PROCEDURES	27
A.	Permit Modifications	27
B.	Proposed Permit Issuance	28

VII. REFERENCES FOR TEXT AND APPENDICES	28
APPENDIX A--PUBLIC INVOLVEMENT INFORMATION	29
APPENDIX B--GLOSSARY	30
APPENDIX C--TECHNICAL CALCULATIONS	34
APPENDIX D--RESPONSE TO COMMENTS	35

I. INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later amendments in 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One mechanism for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System of permits (NPDES permits), administered by the federal Environmental Protection Agency (EPA). The EPA authorized the state of Washington to manage the NPDES permit program in our state. Our state legislature accepted the delegation and assigned the power and duty for conducting NPDES permitting and enforcement to Ecology. The legislature defined Ecology's authority and obligations for the wastewater discharge permit program in 90.48 RCW (Revised Code of Washington).

Ecology adopted rules describing how it exercises its authority:

- Procedures Ecology follows for issuing NPDES permits (chapter 173-220 WAC)
- Water quality criteria for surface waters (chapter 173-201A WAC) and for ground waters (chapter 173-200 WAC)
- Sediment management standards (chapter 173-204 WAC)
- Submission of Plans and Reports for Construction of Wastewater Facilities (chapter 173-240 WAC)

These rules require any industrial facility operator to obtain an NPDES permit before discharging wastewater to state waters. They also help define the basis for limits on each discharge and for performance requirements imposed by the permit.

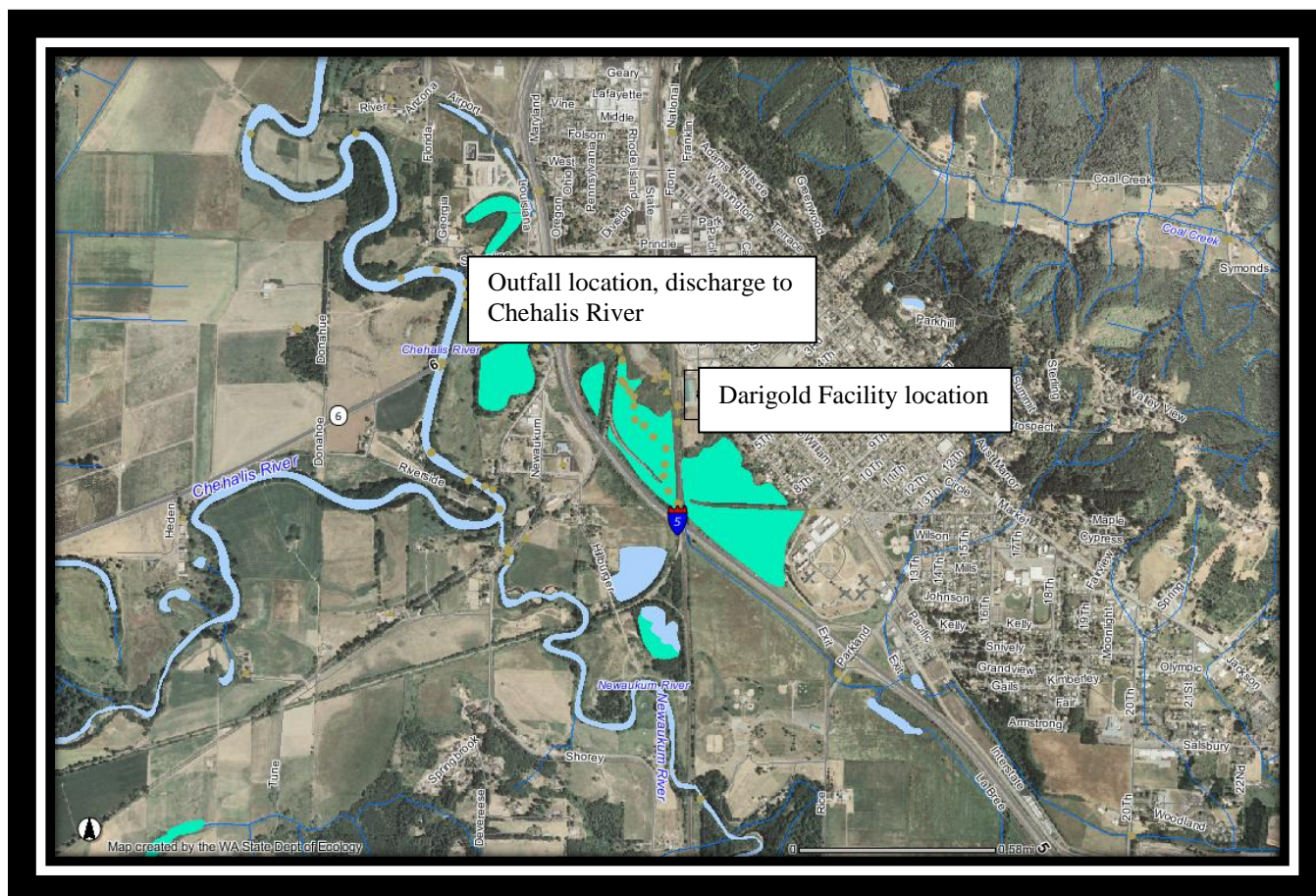
Under the NPDES permit program and in response to a complete and accepted permit application Ecology must prepare a draft permit and accompanying fact sheet, and make them available for public review before final issuance. Ecology must also publish an announcement (public notice) telling people where they can read the draft permit, and where to send their comments, during a period of 30 days (WAC 173-220-050). (See **Appendix A--Public Involvement** for more detail about the Public Notice and Comment procedures). After the Public Comment Period ends, Ecology may make changes to the draft NPDES permit in response to comments. Ecology will summarize the responses to comments and any changes to the permit in **Appendix D**.

II. BACKGROUND INFORMATION

Table 1: General Facility Information

Applicant:	Darigold, Inc. Chehalis Plant (Formerly WestFarm Foods)
Facility Name and Address:	Darigold, Inc. Chehalis Plant 67 Chehalis Avenue Chehalis, WA98532
Type of Treatment:	Biological Treatment Process (Trickling Filtration) and Activated Sludge)
SIC Code	5143 - Dairy Products, 2023-Condensed and Evaporated Milk, 2033 – Canned Fruits, Vegetables, Preserves, Jams and Jellies
Discharge Location:	Chehalis River Latitude: 46.65833 Longitude: -122.9953

Figure 1. Facility Location Map



A. Facility Description

History

The Chehalis Darigold Cheese Plant (Darigold) was built in 1947. The milk powder facility and the treatment wastewater treatment plant were built in 1983. According to Ecology's database, the first NPDES permit for this facility was issued in early 90's. The current NPDES permit is due to expire on June 30, 2010.

Since 2008, during dry periods, Darigold has discharged its wastewater to the city of Chehalis's (the City) wastewater treatment plant under the following conditions:

For the period May 1st through September 15th of each year, Darigold shall cease discharge to the Centralia Reach on the next day and all subsequent days after the flow of Centralia Reach is less than 500 cfs. When the flow in the Centralia Reach goes above 1,000 cfs for three consecutive days, Darigold may continue/resume discharge to the River. However, Darigold shall again cease discharge to the Centralia Reach on the next after the flow is less than 500 cfs.

Due to the flow based conditions in the permit, Darigold submitted an engineering report to the City and Ecology for their approval. Ecology approved this report on May 9, 2007. This engineering report analyzed Darigold's wastewater and its impact on the City's wastewater treatment plant and its capacity.

The City and Darigold signed the final agreement titled “*city of Chehalis and Darigold Inc. Sewer Use and Industrial Wastewater discharge Agreement*” in July 2007.

The previous NPDES permit authorized Darigold to land apply its treated wastewater under the special permit conditions. Given the 2007 agreement with the City, Darigold decided to discontinue land applying its wastewater.

Industrial Process

Darigold receives buttermilk, whey, permeate and condensed skim milk from other facilities which are processed and dried into powdered products. This facility also processes rice sweetener. Darigold’s reported production capacity in the permit application of January 30, 2009, at approximately 3.2 million pounds of fluid milk per day. Darigold stated that it had no immediate plans to change the design capacity of its plant. Its production varies with the market and supply of milk. Darigold uses water from the City for cooling and powder production. The sources of wastewater generated at the facility are cooling water, condensing water (condensate from evaporation milk), and process water.

Wastewater Treatment and Discharge

Darigold treats its process wastewater with a roughing filter, aeration basin, and clarifier. It pumps this treated wastewater through 3,400 feet of 6-inch diameter ductile iron pipe, under I-5, to the Chehalis River (Figure 1). During the low flow periods of the Chehalis River in the summer months, Darigold discharges its wastewater to the City’s wastewater treatment plant. Figure 2 shows the treatment process and the effluent discharge point locations.

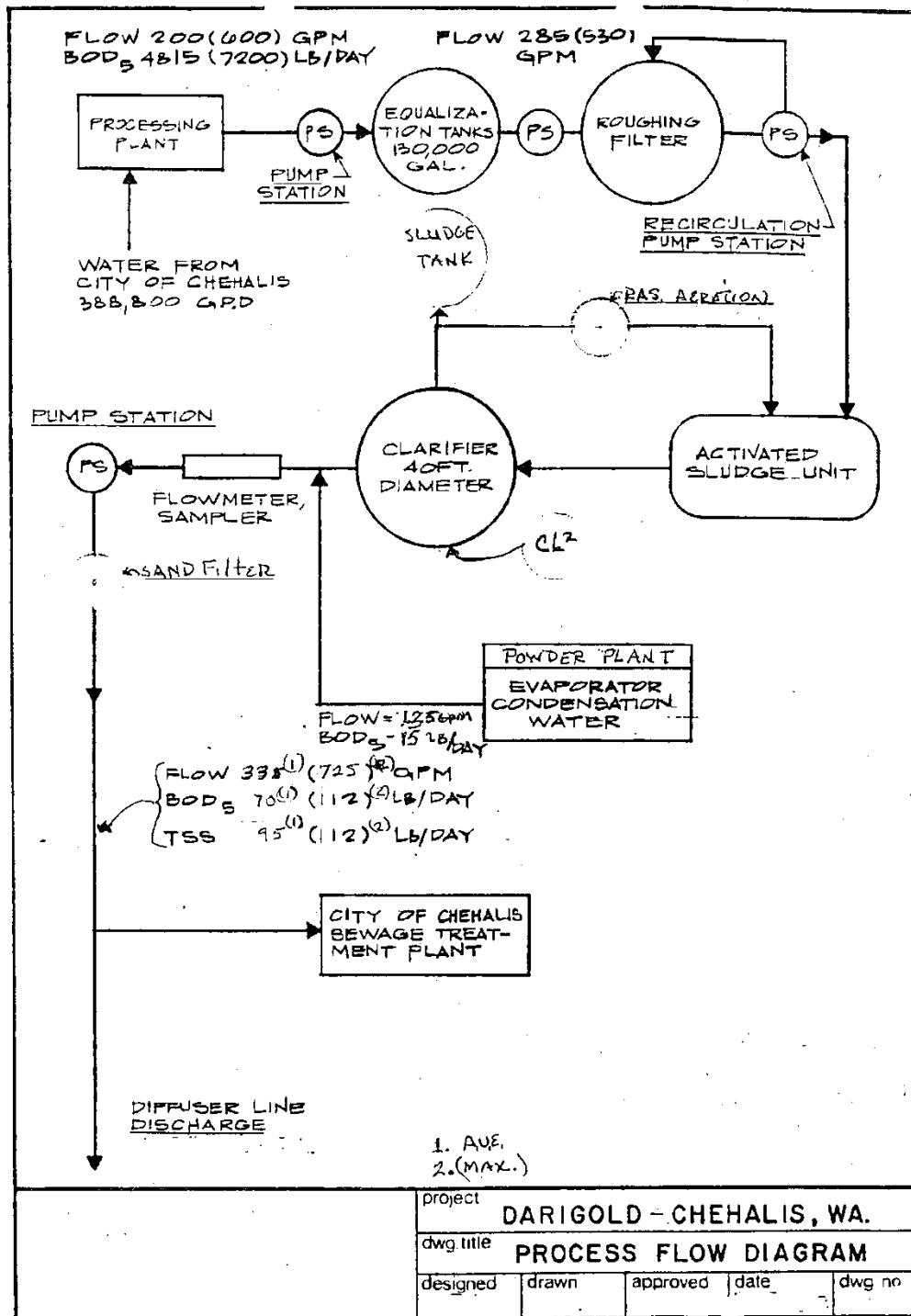


Figure 2 – Wastewater Treatment Process

Discharge Outfall

During the winter months, Darigold discharges the treated wastewater through outfall 001 to the Chehalis River in the vicinity of the City's Wastewater Treatment Plant (WWTP). The existing permit requires

Darigold to inspect its outfall every five years. On August 28, 2008, Darigold's consultant (Associated Underwater Services Inc.) conducted an underwater inspection of the outfall and its diffuser sections. The consultant stated that the outfall is in excellent condition. This outfall extends down from the riverbank sharply (70 degrees) and then turns horizontally into the river at a depth of 8 feet.

B. Permit Status

Darigold submitted an application for permit renewal on January 30, 2009. Ecology accepted it as complete on February 13, 2009. Ecology issued the previous permit for this facility on May 9, 2005. The previous permit placed effluent limits on the following parameters:

- Biochemical Oxygen Demand (BOD)
- Total Suspended Solids (TSS)
- Chlorine (Total Residual)
- pH
- Fecal Coliform
- Ammonia

C. Summary of Compliance with Previous Permit Issued

Ecology staff last conducted a non- sampling compliance inspection on February 6, 2009. Darigold has complied with the effluent limits and permit conditions throughout the duration of the permit with just a few exceptions. Ecology reviewed this facility's Discharge Monitoring Reports (DMRs) and inspections conducted throughout the permit period.

The results indicate (Table 2) that Darigold failed to meet the permit criteria for the following parameters on nine occasions on the following dates according to reported DMRs:

Table 2: Permit Violations

Violation Dates	Parameters
04/01/05, 06/01/05, 07/01/05	Chlorine, Total Residual
12/01/06, 01/01/07	Solids, Total Suspended
01/01/07	BOD ₅ , Nitrogen, Ammonia Total (as N), pH

D. Wastewater Characterization

The concentration of pollutants in the discharge was reported in a NPDES permit application and in discharge monitoring reports. The tabulated data in table 3 presents the flow and characteristics of the wastewater effluent submitted in the permit renewal application. The wastewater effluent was characterized for the following parameters:

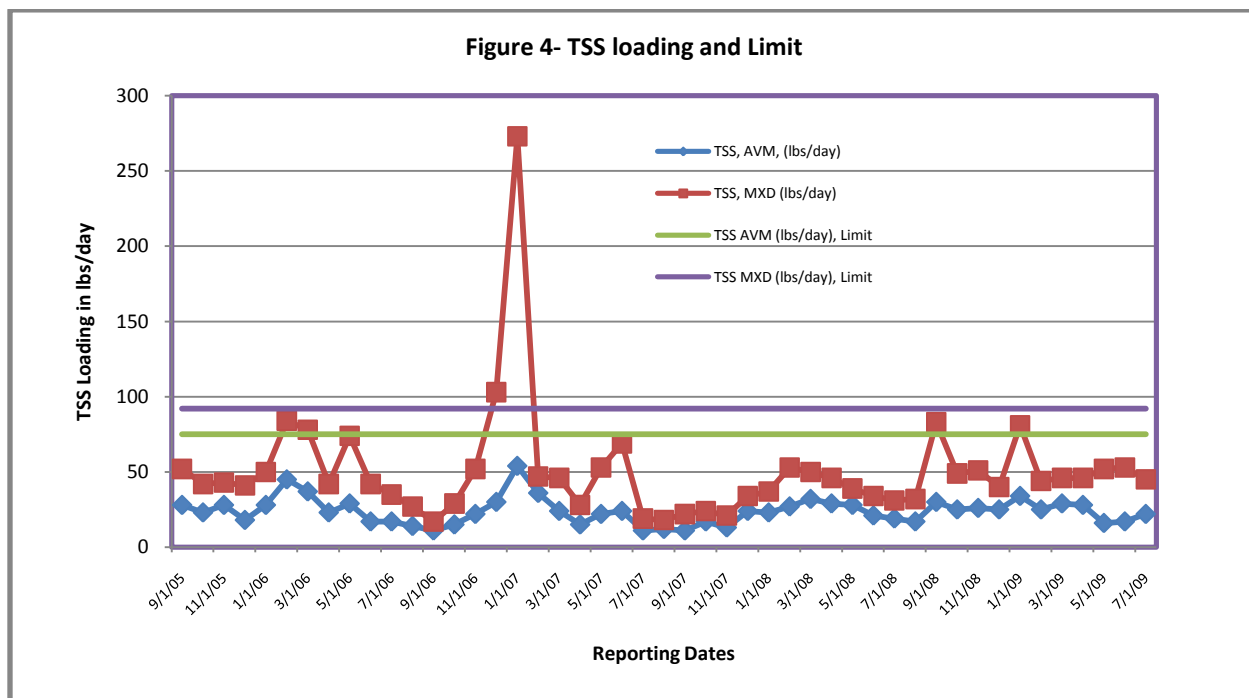
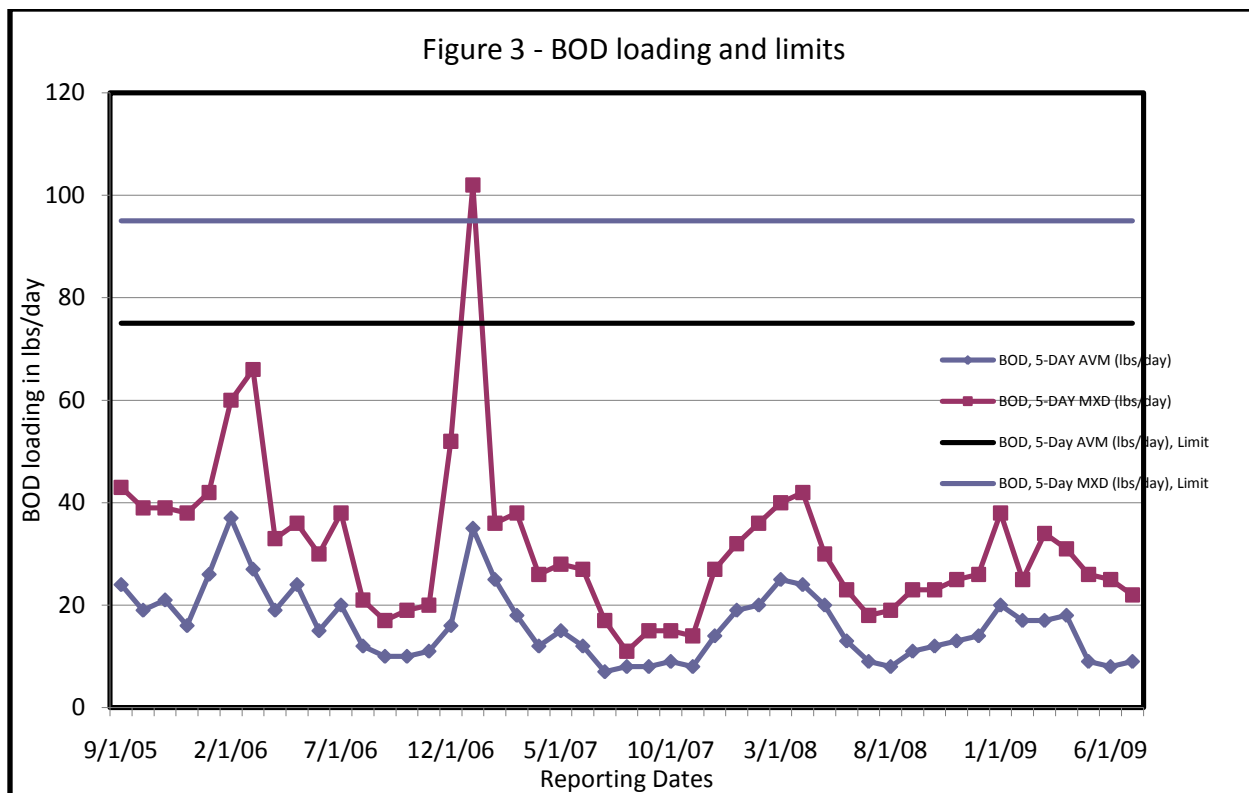
Table 3: Wastewater Characterization (Application submitted January 30, 2009)

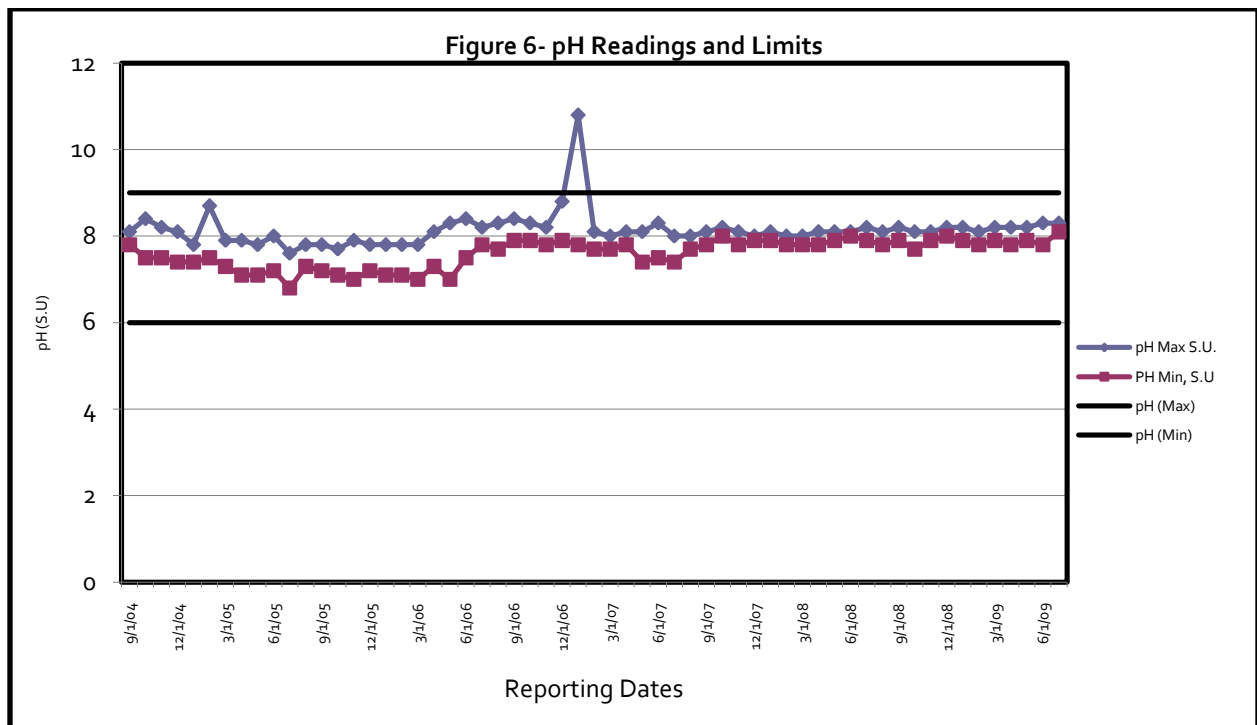
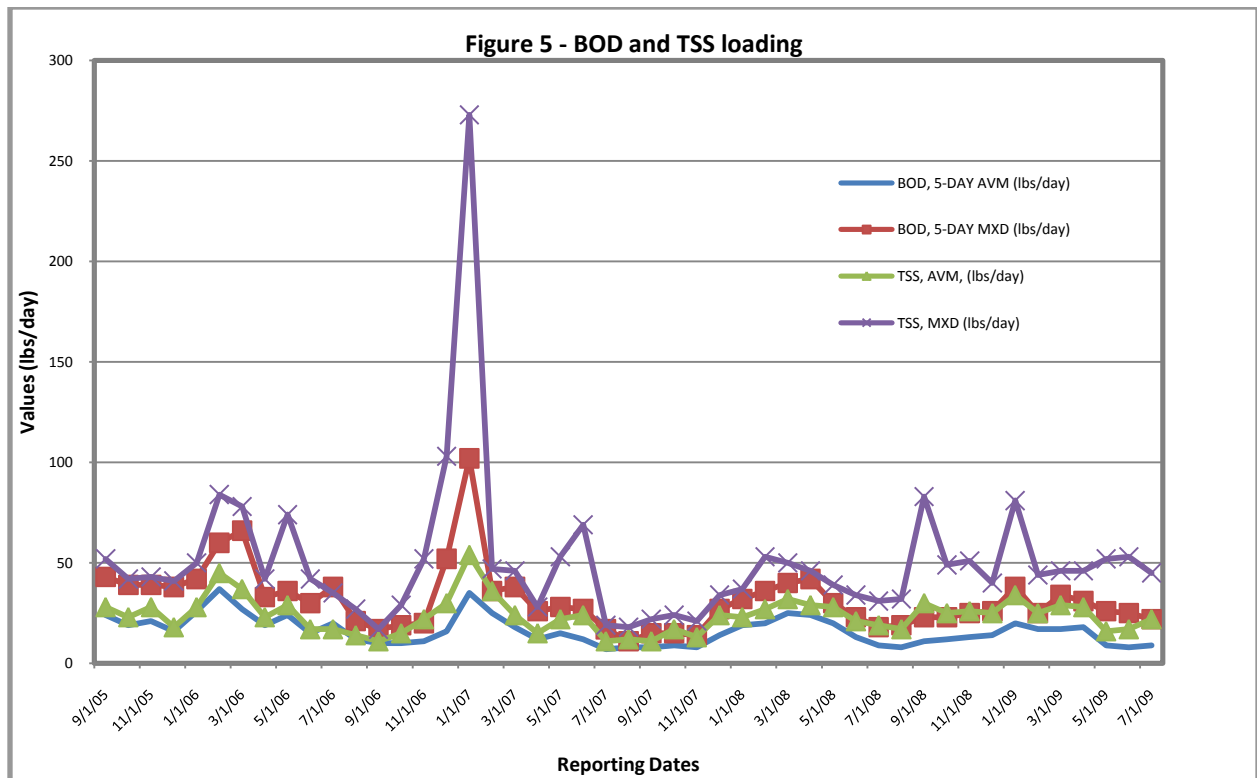
Parameter	Average Concentration	Maximum Concentration
BOD (mg/L)	6	45
TSS (mg/L)	24	120
Ammonia (As N) (mg/L)	0.8	11.1
Flow (MGD)	0.326	0.463
pH (Standard Units)	7.0 (Minimum) and 10.8 (Maximum)	
Phosphorus (as P) Total, mg/L	-	4.55
Sulfate (as SO ₄), mg/L	-	18
Antimony, µg/L	-	0.09
Chromium, µg/L	-	0.8
Cobalt, µg/L	-	0.14
Copper, µg/L	-	2.1
Cyanide, mg/L	-	0.02
Iron, Total, µg/L	-	28
Lead, µg/L	-	0.27
Magnesium, µg/L	-	1820
Molybdenum, Total, µg/L	-	0.57
Nickel, µg/L	-	0.96
Zinc, µg/L	-	20

Ecology reviewed the wastewater characteristics for the Darigold plant, based on DMRs for outfall 001 for the last four and a half years. The graphs below (Figures 3 and 4) show the trend of the effluent characteristics for total suspended solids (TSS) and Biochemical Oxygen Demand (BOD).

Figure 3 reveals that Darigold has met the waste load allocation limits except for one point where they exceeded the waste load limit for BOD. Figure 4 reveals that Darigold met the TSS limit except for two times between December 2006 and February 2007. The facility has not identified the reasons for these violations. The trend in Figure 5 reveals that generally TSS and BOD move in the same direction. Total suspended solids have more volatility in the wastewater than BOD.

Figure 6 reveals that the pH readings from the samples of wastewater discharge are within the required limits for wastewater effluents during the course of this permit, with one exception. During the month of January of 2007, Darigold exceeded all three limits for BOD, TSS and pH.





The previous permit did not require Darigold to report the wastewater effluent temperature although it did require the facility to continuously record the temperature of the Chehalis River at the upstream and downstream of its outfall. Without effluent temperature data, Ecology could not calculate the reasonable potential for temperature to exceed water quality standards.

Figure 7 shows the results from the continuous temperature monitoring upstream and downstream of Darigold's outfall. The temperature in the river ranged from a low of 0 degree centigrade to 28 degrees centigrade. This figure reveals that there is virtually no difference between the upstream and downstream temperature readings at the edge of the mixing zone. This shows that Darigold's discharge does not impact the Chehalis River temperature at the edge of the mixing zone.

Figure 8 shows the flow and the temperature upstream and downstream of the Darigold's outfall. This flow is derived based on the following equation.

$Y = 0.7396X - 28.28$, where:

- Y = is the flow, in cubic feet per second (cfs), in the Centralia Reach
- X = is the flow of Chehalis River, in cfs, as measured at the Grand Mound Gage

Figure 8 shows that the temperature is inversely related to the flow. This means that when the flow increases, the temperature decreases. When the flow decreases the temperature increases.

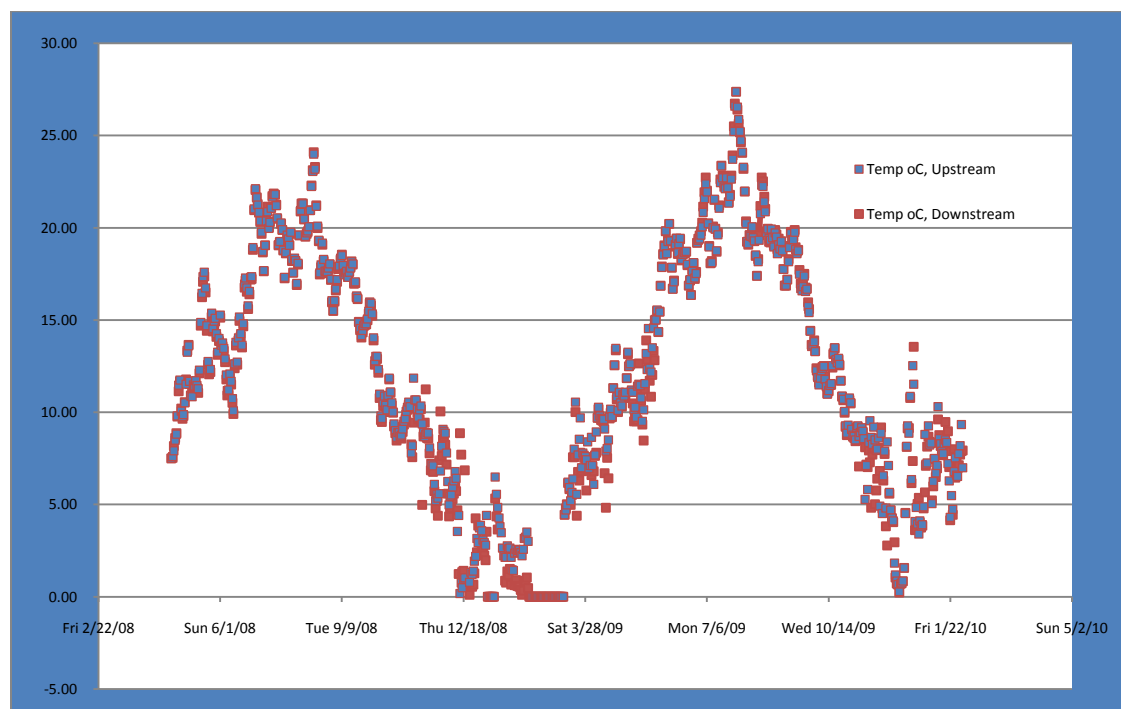


Figure 7 – Temperature in the Chehalis River

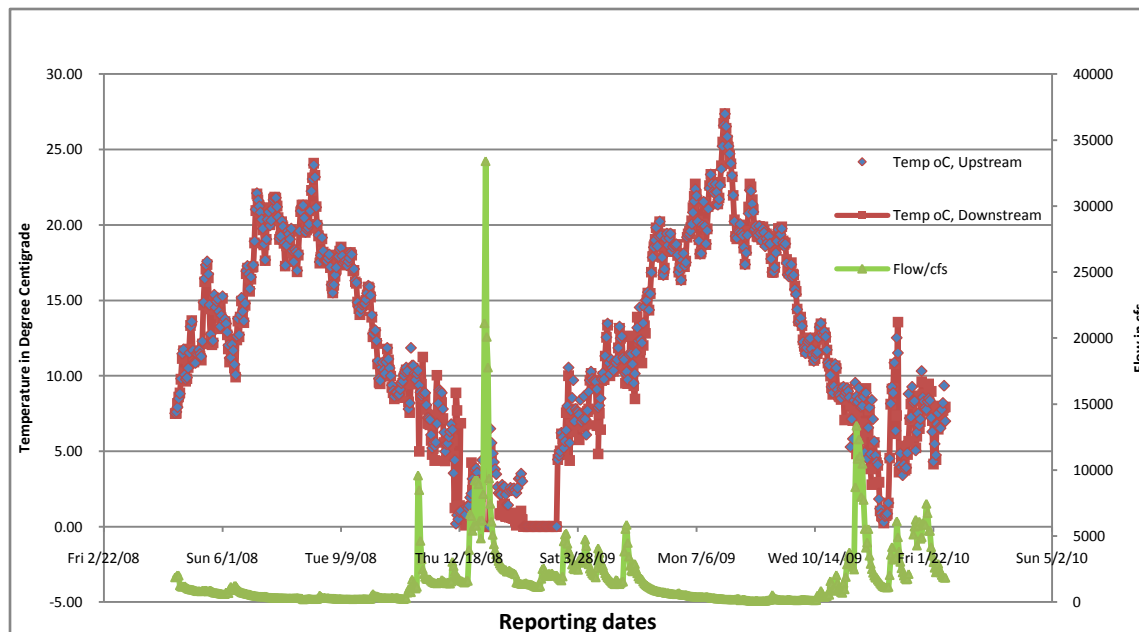


Figure 8 – Flow versus Temperature

Ecology also compared the technology based (production based) effluent limits with water quality based effluent limits. This comparison is shown in the following table (Table 4). This comparison shows that the production based limits are generally higher than the water quality based limits. The water quality based limits for BOD5 and TSS are fixed regardless of production levels. For low production levels like on November 1, 2009, the technology based average monthly and maximum daily limits were both lower meaning a more restrictive limit than the water quality based limits for BOD5 and TSS. The opposite occurs when production levels are high, like on April 1, 2009, both the average monthly and maximum daily technology based limits for BOD5 and TSS are higher, less restrictive, than the water quality based limits. Ecology is using the water quality based limits for BOD5 and TSS in the permit because they are more restrictive for larger quantities of production. According to the sample measurement data, the Permittee is already meeting the water quality based limits for both pollutants.

Table 4 – Permit limit comparison technology based (production based) and water quality

Date	Sample measurement data, BOD5		Technology based, (Production based) BOD5		Water Quality Based Limits, BOD5		Sample measurement data, TSS		Technology based (Production based), TSS		Water Quality Based Limits, TSS	
	Average monthly	Maximum daily	Average monthly	Maximum daily	Average monthly	Maximum daily	Average monthly	Maximum daily	Average monthly	Maximum daily	Average monthly	Maximum daily
12/1/2009	27	64	39	98	75	95	49	86	59	146	70	95
11/1/2009	9	36	24	59	75	95	24	64	35	88	70	95
10/1/2010	10	25	39	98	75	95	29	61	59	147	70	95
9/1/2009	9	17	48	120	75	95	28	50	72	180	70	95
8/1/2009	5	13	63	157	75	95	20	40	95	236	70	95
7/1/2009	9	22	68	170	75	95	22	45	102	255	70	95
6/1/2009	8	25	72	181	75	95	17	53	109	270	70	95
5/1/2009	9	26	75	188	75	95	16	52	113	282	70	95
4/1/2009	18	31	79	199	75	95	28	46	120	298	70	95
3/1/2009	17	34	53	133	75	95	29	46	80	199	70	95
2/1/2009	17	25	52	131	75	95	25	44	79	196	70	95
1/1/2009	20	38	79	198	75	95	34	81	119	297	70	95

E. Description of the Receiving Water

Darigold discharges to the Upper Chehalis River Watershed, which is located south of Olympia, extending from the Black Hills to the Willapa Hills. Ecology identifies this watershed as Water Resources Inventory Area (WRIA) 23. Major tributaries of the Upper Chehalis River are the South Fork Chehalis River, the Newaukum River, Skookumchuck River and the Black River. One known nearby point source outfall is the city of Chehalis's wastewater treatment effluent. Other significant non-point sources of pollutants nearby are unknown.

F. SEPA Compliance

Regulation exempts reissuance or modification of any wastewater discharge permit from the State Environmental Policy Act (SEPA) process as long as the permit contains conditions are no less stringent than state rules and regulations. The exemption applies only to existing discharges, not to new discharges.

III. PROPOSED PERMIT CONDITIONS

Federal and State regulations require that effluent limits in an NPDES permit must be either technology or water quality-based.

- Technology-based limits are based upon the treatment methods available to treat specific pollutants. Technology-based limits are set by the EPA and published as a regulation, or Ecology develops the limit on a case-by-case basis (40 CFR 125.3, and chapter 173-220 WAC).
- Water quality-based limits are calculated so that the effluent will comply with the Surface Water Quality Standards (chapter 173-201A WAC), Ground Water Standards (chapter 173-200 WAC), Sediment Quality Standards (chapter 173-204 WAC) or the National Toxics Rule (40 CFR 131.36).

- Ecology must apply the most stringent of these limits to each parameter of concern. These limits are described below.

The limits in this permit reflect information received in the application and from supporting reports (engineering). Ecology evaluated the permit application and determined the limits needed to comply with the rules adopted by the state of Washington. Ecology does not develop effluent limits for all reported pollutants. Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation.

Nor does Ecology usually develop permit limits for pollutants that were not reported in the permit application but that may be present in the discharge. The permit does not authorize discharge of the non-reported pollutants. During the five-year permit term, the facility's effluent discharge conditions may change from those conditions reported in the permit application. The facility must notify Ecology, as described in 40 CFR 122.42(a), if significant changes occur in any constituent. Industries may be in violation of their permit until Ecology modifies the permit to reflect additional discharge of pollutants.

A. Design Criteria

Under WAC 173-220-150 (1) (g), neither flows nor waste loadings may exceed approved design criteria. In the past, Ecology has determined that wastewater flows from the plant do not exceed the approved design criteria for their treatment system. The wastewater flow has not substantially changed from flow reported in previous permit for Darigold.

B. Technology-Based Effluent Limits

Discharge to the Centralia Reach of Chehalis River

In the current and proposed new permit, Darigold produces 28 products. Currently Darigold is not processing all products but anticipates doing so in the future. Darigold's activities fall into three Industrial classifications (SIC codes):

- 5143-Dairy Products
- 2023 - Evaporated Milk
- 2033- Canned Fruits, Vegetables, Preserves, Jams and Jellies

Darigold must meet the federal requirements for all three industrial classifications. For industrial classification 5143 and 2023, the federal effluent guidelines are specified under 40 CFR 405. You can find the federal effluent guideline at: <http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&rgn=div5&view=text&node=40:28.0.1.1.5&idno=40>

For industrial classification 2033, the federal effluent guidelines are specified under 40 CFR 407. You can find the federal effluent guideline at: <http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&rgn=div5&view=text&node=40:28.0.1.1.7&idno=40>

The federal effluent guidelines are based on daily production. Chapter 173-220 WAC requires industries to apply all known, available, and reasonable methods of prevention, control and treatment (AKART) to meet the permit requirements.

Table 5 - Effluent limits guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available

Classification	Product	Effluent Characteristics	Effluent Limits (lbs/100 lbs of BOD ₅ input ^a)	
			Maximum for any one day	Average of daily values for 30 consecutive days shall not exceed
Fluid Products 40 CFR 405 Subpart B	Whole Milk	BOD ₅	0.338	0.135
		TSS	0.551	0.203
		pH	6.0 -9.0 Standard Units	
Cultured Products 40 CFR 405 Subpart C	Yoghurt Sour Cream	BOD ₅	0.338	0.135
		TSS	0.506	0.203
		pH	6.0 -9.0 Standard Units	
Butter 40 CFR 405 Subpart D	Anhydrous Milk fat Butter Butter Blends	BOD	0.138	0.055
		TSS	0.206	0.083
		pH	6.0 9.0 Standard Units	
Cottage Cheese and Cultured Cream Cheese 40 CFR 405 Subpart E	Cottage Cheese Cultured Cream Cheese	BOD ₅	0.670	0.268
		TSS	1.005	0.402
		pH	6.0 – 9.0	
Fluid Mix for Ice Cream and Other Frozen Desserts 40 CFR 405 Subpart G	Fluid Mix for Ice Cream and Other Frozen Desserts	BOD ₅	0.220	0.068
		TSS	0.330	0.132
		pH	6.0 – 9.0	
Condensed milk 40 CFR 405 Subpart I	Condensed milk Lactose, Caseinate Milk Calcium	BOD ₅	0.345	0.138
		TSS	0.518	0.207
		pH	6.0 – 9.0	
Dry milk 40 CFR 405 Subpart J	Whole Milk Powder, Dry Buttermilk, Skim Milk, Powder Coffee Sweetener and Whitener	BOD ₅	0.163	0.065
		TSS	0.244	0.098
		pH	6.0 – 9.0	
Condensed Whey 40 CFR 405 Subpart K	Condensed Whey	BOD ₅	0.100	0.040
		TSS	0.150	0.060
		pH	6.0 – 9.0	
Dry Whey 40 CFR 405 Subpart L	Dry Whey, WPC-34, Whey Permeate	BOD ₅	0.130	0.065
		TSS	0.195	0.098
		pH	6.0 – 9.0	
Apple Juice 40 CFR 407 Subpart A	Apple Juice	BOD ₅	0.60 ^b	0.30 ^b
		TSS	0.80 ^b	0.40 ^b
		pH	6.0 – 9.0	
Citrus Products 40 CFR 407 Subpart C	Citrus Juice	BOD ₅	0.80 ^b	0.40 ^b
		TSS	1.70 ^b	0.85 ^b
		pH	6.0 – 9.0	
Dehydrated Potato Products 40 CFR 407 Subpart E	Dehydrated Potato Products	BOD ₅	2.40 ^b	1.20 ^b
		TSS	2.80	1.40 ^b
		pH	6.0 – 9.0	
Canned and Preserved Fruits 40 CFR 407 Subpart F	Other Fruit Juices	BOD ₅	1.10 ^b	0.69 ^b
		TSS	1.99 ^b	1.44 ^b
		pH	6.0 -9.0	
Canned and	Carrot Juice	BOD ₅	1.76 ^b	1.11 ^b
		TSS	3.19 ^b	2.30 ^b

Classification	Product	Effluent Characteristics	Effluent Limits (lbs/100 lbs of BOD ₅ input ^a)	
			Maximum for any one day	Average of daily values for 30 consecutive days shall not exceed
Preserved Vegetables 40 CFR 407 Subpart G		pH	6.0 – 9.0	

^a The term “BOD₅ input” shall mean the biochemical oxygen demand of the materials entered into process. It can be calculated by multiplying the fats, proteins and carbohydrates by factors of 0.890, 1.031 and 0.691 respectively. Organic acids (e.g., lactic acids) should be included as carbohydrates. Composition of input materials may be based on either direct analyses or generally accepted published values

^b lb/1,000 lb of raw material

Discharge to the City of Chehalis’s Wastewater Treatment Plant

There are no pretreatment limitations for new or existing sources discharging to a sanitary sewer system for this industry, 40 CFR 405. State regulations under Chapter 173-216 WAC requires the use of all known available and reasonable methods of treatment (AKART) for all wastewater. Ecology has determined that the pretreatment engineering report of Darigold Ecology approved in May 2007 will satisfy the requirement for AKART.

Local Limits

Darigold discharges its wastewater to the City’s wastewater treatment plant during the period of May 1 through September 15 of each year. In 2007, Darigold signed an agreement with the City to discharge its wastewater to the City’s wastewater treatment plant. According to this agreement, Darigold must meet the following limits before it can discharge wastewater to the City’s wastewater treatment plant.

Table 6: Wastewater pretreatment requirements (Local Limits)

Parameter	Monthly Average Limits	Units
Flow (maximum monthly average)	0.45	MGD
Flow (maximum peak daily)	0.55	MGD
Biochemical Oxygen Demand	<45	mg/L
Total Suspended Solids	<45	mg/L
pH	>6.0 & <9.0	S.U.
Ammonia Nitrogen	<10	mg/L
Total Residual Chlorine	<1.0	mg/L
Total Fats, Oils, and Grease	<100.0	mg/L
Temperature	<40.0	°C
Arsenic	<0.23	mg/L
Cadmium	<0.15	mg/L
Chromium	<2.00	mg/L
Copper	<0.25	mg/L
Cyanide	<1.4	mg/L
Lead	<0.14	mg/L
Mercury	<0.0003	mg/L
Nickel	<1.80	mg/L

Parameter	Monthly Average Limits	Units
Selenium	<0.20	mg/L
Silver	<0.16	mg/L
Zinc	<1.4	mg/L

C. Water Quality-Based Effluent Limits

The Washington State Surface Water Quality Standards (chapter 173-201A WAC) are designed to protect existing water quality and preserve the beneficial uses of Washington's surface waters. Waste discharge permits must include conditions that ensure the discharge will meet established surface water quality standards (WAC 173-201A-510). Water quality-based effluent limits may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin wide total maximum daily load (TMDL) Study.

Numerical Criteria for the Protection of Aquatic Life and Recreation

Numerical water quality criteria are published in the Water Quality Standards for Surface Waters (chapter 173-201A WAC). They specify the levels of pollutants allowed in receiving water to protect aquatic life and recreation in and on the water. Ecology uses numerical criteria along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limits, the discharge must meet the water quality-based limits permit.

Numerical Criteria for the Protection of Human Health

The U.S. EPA has published 91 numeric water quality criteria for the protection of human health that are applicable to dischargers in Washington State (40 CFR 131.36). These criteria are designed to protect humans from exposure to pollutants linked to cancer and other diseases, based on consuming fish and shellfish and drinking contaminated surface waters. The Water Quality Standards also include radionuclide criteria to protect humans from the effects of radioactive substances.

Narrative Criteria

Narrative water quality criteria (e.g., WAC 173-201A-240(1); 2006) limit the toxic, radioactive, or other deleterious material concentrations that the facility may discharge to levels below those which have the potential to:

- Adversely affect designated water uses.
- Cause acute or chronic toxicity to biota.
- Impair aesthetic values.
- Adversely affect human health.

Narrative criteria protect the specific designated uses of all fresh waters (WAC 173-201A-200, 2006) and of all marine waters (WAC 173-201A-210, 2006) in the state of Washington.

Antidegradation

The purpose of Washington's Antidegradation Policy (WAC 173-201A-300-330; 2006) is to:

Restore and maintain the highest possible quality of the surface waters of Washington.

- Describe situations under which water quality may be lowered from its current condition.
- Apply to human activities that are likely to have an impact on the water quality of surface water.
- Ensure that all human activities likely to contribute to a lowering of water quality, at a minimum, apply all known, available, and reasonable methods of prevention, control, and treatment (AKART).
- Apply three Tiers of protection (described below) for surface waters of the state.

Tier I ensures existing and designated uses are maintained and protected and applies to all waters and all sources of pollutions. Tier II ensures that waters of a higher quality than the criteria assigned are not degraded unless such lowering of water quality is necessary and in the overriding public interest. Tier II applies only to a specific list of polluting activities. Tier III prevents the degradation of waters formally listed as "outstanding resource waters," and applies to all sources of pollution.

A facility must prepare a Tier II analysis when all three of the following conditions are met:

- The facility is planning a new or expanded action.
- Ecology regulates or authorizes the action.
- The action has the potential to cause measurable degradation to existing water quality at the edge of a chronic mixing zone.

This facility must meet Tier I requirements.

- Dischargers must maintain and protect existing and designated uses. Ecology may not allow any degradation that will interfere with, or become injurious to, existing or designated uses, except as provided for in chapter 173-201A WAC.

Ecology's analysis described in this section of the fact sheet demonstrates that the existing and designated uses of the receiving water will be protected under the conditions of the proposed permit.

Mixing Zones

A mixing zone is the defined area in the receiving water surrounding the discharge port(s), where wastewater mixes with receiving water. Within mixing zones the pollutant concentrations may exceed water quality numeric criteria, so long as the diluting wastewater doesn't interfere with designated uses of the receiving water body (e.g., recreation, water supply, and aquatic life and wildlife habitat, etc.). The pollutant concentrations outside of the mixing zones must meet water quality numeric criteria.

Mixing zones can only be authorized for discharges that are receiving all known, available, and reasonable methods of prevention and control (AKART). A mixing zone are authorized in accordance

with the geometric configuration, flow restriction, and other restrictions for mixing zones in Chapter 173-201A WAC and are defined as follows:

These zones are subject to the following limitations:

(i) Not extend in a downstream direction for a distance from the discharge port greater than three hundred feet plus the depth of water over the discharge port, or extend upstream for a distance of over one hundred feet;

(ii) Not utilize greater than 25 percent of the flow; and

(iii) Not occupy greater than 25 percent of the width of the water body.

Ecology has authorized a mixing zone for this discharge for temperature only. The applicable conditions for the authorized mixing zone are provided in the previous section on mixing zones part i:

D. Designated Uses and Surface Water Quality Criteria

Applicable designated uses and surface water quality criteria are defined in chapter 173-201A WAC. In addition, the U.S. EPA set human health criteria for toxic pollutants (40 CFR 131.36). Criteria applicable to this facility's discharge are summarized below in **Table 5**.

Aquatic Life Uses are designated based on the presence of, or the intent to provide protection for, the key uses. All indigenous fish and non-fish aquatic species must be protected in waters of the state in addition to the key species. The Aquatic Life Uses for this receiving water are identified below.

Table 7: Aquatic Life Uses & Associated Criteria

Salmonid Spawning, Rearing, And Migration	
Temperature Criteria – Highest 7DAD MAX	17.5°C (63.5°F)
Dissolved Oxygen Criteria	8.0 mg/L
Turbidity Criteria	<ul style="list-style-type: none">• 5 NTU over background when the background is 50 NTU or less; or• A 10 percent increase in turbidity when the background turbidity is more than 50 NTU
Total Dissolved Gas Criteria	Total dissolved gas shall not exceed 110 percent of saturation at any point of sample collection
pH Criteria	pH shall be within the range of 6.5 to 8.5 with a human-caused variation within the above range of less than 0.5 units

- The recreational uses are extraordinary primary contact recreation, primary contact recreation, and secondary contact recreation. The recreational uses for this receiving water are identified below.

Table 8: Recreational Uses & Associated Criteria

Recreational use	Criteria
Primary Contact Recreation	Fecal coliform organism levels must not exceed a geometric mean value of 100 colonies /100 mL, with not more than 10 percent of all samples (or any single sample when less than ten sample points exist) obtained for calculating the geometric mean value exceeding 200 colonies /100 mL

- The **water supply uses** are domestic, agricultural, industrial, and stock watering.
- The **miscellaneous fresh water uses** are wildlife habitat, harvesting, commerce and navigation, boating, and aesthetics.

E. Evaluation of Surface Water Quality -Based Effluent Limits for Numeric Criteria

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near field) or at a considerable distance from the point of discharge (far field). Toxic pollutants, for example, are near-field pollutants--their adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as biological oxygen demand (BOD) is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of calculating surface water quality-based effluent limits varies with the point at which the pollutant has its maximum effect.

Ecology conducted total maximum daily load (TMDL) studies and developed wasteload allocations (WLA) for BOD₅, TSS, Ammonia and temperature on the upper Chehalis River. The proposed permit implements limits for these parameters based on these studies and the Consent Decree. The wastewater discharge of Darigold is subject to the provisions of the Consent Decree, entered on October 14, 1998, in the matter of *Centralia, et al. v. EPA, et al.*, Civil Action No. 96-5968RJB, United States District Court for the Western District of Washington at Tacoma.

You can find these TMDLs studies at Ecology's website at the following addresses: <http://www.ecy.wa.gov/pubs/0010018.pdf> (Revised Upper Chehalis River Basin Dissolved Oxygen TMDL and <http://www.ecy.wa.gov/pubs/9952.pdf> (Upper Chehalis River Basin Temperature Total Maximum Daily Load. Table 9 shows the permit limits for each pollutant. These water quality based limits are more stringent than the technology based limits for direct discharges; therefore the proposed permit includes the water quality based limits.

Table 9: Seasonal variation of Centralia Reach River Flows and Wasteload Allocations for Darigold

Table 9- FINAL EFFLUENT LIMITS: OUTFALL # Outfall 001 (Discharge to the Centralia Reach of Chehalis River)		
Parameter	Average Monthly ^a	Maximum Daily ^b
Flow, MGD	0.48	0.60
Biochemical Oxygen Demand (5-day), lbs/day	75	95
Total Suspended Solids, lbs/day	70	95
Ammonia , mg/L	3	6
Temperature, °C	See Table 5	See Table 5

Table 9- FINAL EFFLUENT LIMITS: OUTFALL # Outfall 001 (Discharge to the Centralia Reach of Chehalis River)		
Parameter	Average Monthly ^a	Maximum Daily ^b
Fecal Coliform Bacteria	200/100 mL	400/ 100 mL
Total Chlorine Residual	N/A	Non-detectable

BOD₅--Under the critical conditions Ecology predicted violations of the surface water quality standards would occur due to BOD in the effluent during the dry season. To comply with this determination Darigold must cease discharge to the Chehalis River during the dry season. Ecology estimated the impact of BOD on the receiving water during the TMDL development process, at critical condition. You can find the calculations used to determine dissolved oxygen impacts in the dissolved oxygen TMDL study as referenced above.

Temperature--The state temperature standards (WAC 173-201A-200-210 and 600-612) include multiple elements:

- Annual summer maximum threshold criteria (June 15 to September 15)
- Supplemental spawning and rearing season criteria (September 15 to June 15)
- Incremental warming restrictions
- Protections against acute effects

Ecology evaluates each criterion independently to determine reasonable potential and derive permit limits.

- **Annual summer maximum and supplementary spawning/rearing criteria**

Each water body has an annual maximum temperature criterion [WAC 173-201A-200(1) (c), 210(1)(c), and Table 602]. These threshold criteria (e.g., 12, 16, 17.5, 20°C) protect specific categories of aquatic life by controlling the effect of human actions on summer temperatures.

Some waters have an additional threshold criterion to protect the spawning and incubation of salmonids (9°C for char and 13°C for salmon and trout) [WAC 173-201A-602, Table 602]. These criteria apply during specific date-windows.

The threshold criteria apply at the edge of the chronic mixing zone. Criteria for most fresh waters are expressed as the highest 7-Day average of daily maximum temperature (7-DADMax). The 7-DADMax temperature is the arithmetic average of seven consecutive measures of daily maximum temperatures. Criteria for marine waters and some fresh waters are expressed as the highest 1-Day annual maximum temperature (1-DMax).

- **Incremental warming criteria**

The water quality standards limit the amount of warming human sources can cause under specific situations [WAC 173-201A-200(1)(c)(i)-(ii), 210(1)(c)(i)-(ii)]. The incremental warming criteria apply at the edge of the chronic mixing zone.

At locations and times when background temperatures are cooler than the assigned threshold criterion, point sources are permitted to warm the water by only a defined increment. These

increments are permitted only to the extent doing so does not cause temperatures to exceed either the annual maximum or supplemental spawning criteria.

At locations and times when a threshold criterion is being exceeded due to natural conditions, all human sources, considered cumulatively, must not warm the water more than 0.3°C above the naturally warm condition.

When Ecology has not yet completed a TMDL, our policy allows each point source to warm water at the edge of the chronic mixing zone by 0.3°C. This is true regardless of the background temperature and even if doing so would cause the temperature at the edge of a standard mixing zone to exceed the numeric threshold criteria. Allowing a 0.3°C warming for each point source is reasonable and protective where the dilution factor is based on 25 percent or less of the critical flow. This is because the fully mixed effect on temperature will only be a fraction of the 0.3°C cumulative allowance (0.075°C or less) for all human sources combined.

Temperature Acute Effects

Instantaneous lethality to passing fish: The upper 99th percentile daily maximum effluent temperature must not exceed 33°C; unless a dilution analysis indicates ambient temperatures will not exceed 33°C 2-seconds after discharge.

General lethality and migration blockage: Measurable (0.3°C) increases in temperature at the edge of a chronic mixing zone are not allowed when the receiving water temperature exceeds either a 1DMax of 23°C or a 7DADMax of 22°C.

Lethality to incubating fish: Human actions must not cause a measurable (0.3°C) warming above 17.5°C at locations where eggs are incubating.

Figure 7 of this fact sheet shows the results from the continuous temperature monitoring upstream and downstream of Darigold's outfall. This shows nearly no significant difference between these two temperature readings over one season and indicates the discharge does not have a significant impact to the Chehalis River. The proposed permit requires Darigold to measure effluent wastewater temperature as well as the temperature of the Chehalis River near the Darigold outfall.

During the non-critical period, the TMDL establishes temperature limits based on the background water temperature upstream of the mixing zone. Darigold must apply the following approach to determine that they meet the background temperature criteria. The Ecology report titled "Upper Chehalis River Basin Temperature Total Maximum Daily Load" of July 1, 2001, explains the calculation of the temperature Waste Load Allocation (WLA) on page 26.

Table 10- Temperature calculations method

River Conditions	Background Water Temperature (T) Upstream of the Mixing Zone	Allowable temperature increase
Critical Period	$T \geq \text{Water Quality Criterion}$	For Existing Sources: $t = 0.3^{\circ}\text{C}$ at the mixing zone boundary For New Sources: $t = 0.0^{\circ}\text{C}$ at the end of the discharge pipe

Non critical Period	IF (Water Quality Criterion – T) > 28/(T+7)	THEN For all Sources: t = 28/(T+7)
	IF (Water Quality Criterion – T) ≤ 28/(T+7) AND i. (Water Quality Criterion – T) ≤ 0.3°C ii. (Water Quality Criterion – T) > 0.3°C	THEN i. For all Sources: t = 0.3°C ii. For all Sources: t = (WQ Criterion – T)

“T” represents the background temperature as measured at a point or points unaffected by the discharge and representative of the highest ambient water temperature in the vicinity of the discharge, and “t” represents the maximum permissible temperature increase. Unless specified otherwise, “t” applies at the mixing zone boundary.

pH – The available effluent data (see Figure 6) shows that Darigold’s discharge complies with the surface water quality standards.

F. Human Health

Washington’s water quality standards include 91 numeric human health-based criteria that Ecology must consider when writing NPDES permits. These criteria were established in 1992 by the U.S. EPA in its National Toxics Rule (40 CFR 131.36). The National Toxics Rule allows states to use mixing zones to evaluate whether discharges comply with human health criteria.

Ecology determined the applicant's discharge is unlikely to contain chemicals regulated to protect human health, does not contain chemicals of concern based on existing data or knowledge. Ecology will reevaluate the discharge for impacts to human health at the next permit reissuance.

G. Sediment Quality

The aquatic sediment standards (WAC 173-204) protect aquatic biota and human health. Under these standards Ecology may require a facility to evaluate the potential for its discharge to cause a violation of sediment standards (WAC 173-204-400). You can obtain additional information about sediments at the Aquatic Lands Cleanup Unit website. <http://www.ecy.wa.gov/programs/tcp/smu/sediment.html>

Through a review of the discharger characteristics and of the effluent characteristics, Ecology determined that this discharge has no reasonable potential to violate the Sediment Management Standards.

H. Ground Water Quality Limits

The Ground Water Quality Standards, (chapter 173-200 WAC), protect beneficial uses of ground water. Permits issued by Ecology must not allow violations of those standards (WAC 173-200-100). Darigold does not discharge wastewater to ground and therefore Ecology imposed no permit limits to protect ground water.

I. Comparison of Effluent Limits with Limits of the Previous Permit Issued on May 9, 2005-

Ecology based these permit limits on the applicable federal regulations, total maximum daily load studies for the Chehalis River and the local limits. The waste load allocations (water quality based limits) are more stringent than limits calculated using federal effluent guidelines; therefore Ecology imposed the WLAs developed in the TMDL.

Table 11 – Comparison of Effluent Limits for Outfall 001

	Basis of Limit	Previous Effluent Limits: Outfall # 001		Proposed Effluent Limits: Outfall # 001	
Parameter		Average Monthly	Maximum Daily	Average Monthly	Maximum Daily
Flow, MGD		None	None	0.48	0.60
Biochemical Oxygen Demand (5-day), lbs/day	Water Quality	75	95	75	95
Total Suspended Solids, lbs/day	Water Quality	75	92	75	95
Ammonia, mg/L	Water Quality	None	None	3	6
Fecal Coliform Bacteria	Technology	200	400	200	400
Residual Chlorine (Total)		Zero Detectable	Zero Detectable	Non-detectable	Non-detectable
pH	Technology	6.0 - 9.0		6.0 - 9.0	
The local limits, City of Chehalis (Darigold is not authorized to discharge their treated wastewater to Chehalis River during the dry weather period)					
Flow(maximum monthly average), MGD	Technology	N/A	N/A	0.45	None
Flow (maximum peak daily), MGD	Technology	N/A	N/A	0.55	None
Biochemical Oxygen demand, lbs/day	Technology	N/A	N/A	<45	None
Total Suspended Solids, lbs/day	Technology	N/A	N/A	<45	None
pH, SU	Technology	N/A		6.0 - 9.0	
Ammonia Nitrogen, mg/L	Technology	N/A	N/A	<10	None
Total residual chlorine	Technology	N/A	N/A	<1.00	None
Total Fats, Oils, and Grease, mg/L	Technology	N/A	N/A	<100.00	None
Temperature, °C	Technology	N/A	N/A	<40	None
Arsenic, mg/L	Technology	N/A	N/A	0.23	None
Cadmium, mg/L	Technology	N/A	N/A	<0.15	None
Chromium, mg/L	Technology	N/A	N/A	<2.00	None
Copper, mg/L	Technology	N/A	N/A	<0.25	None
Cyanide, mg/L	Technology	N/A	N/A	<1.40	None
Lead, mg/L	Technology	N/A	N/A	<0.14	None
Mercury, mg/L	Technology	N/A	N/A	<0.0003	None

	Basis of Limit	Previous Effluent Limits: Outfall # 001		Proposed Effluent Limits: Outfall # 001	
Parameter		Average Monthly	Maximum Daily	Average Monthly	Maximum Daily
Nickel, mg/L	Technology	N/A	N/A	<1.8	None
Selenium, mg/L	Technology	N/A	N/A	<0.20	None
Silver, mg/L	Technology	N/A	N/A	<0.16	None
Zinc, mg/L	Technology	N/A	N/A	<1.4	None

IV. MONITORING REQUIREMENTS

Ecology requires monitoring, recording, and reporting (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and that the discharge complies with the permit's effluent limits.

The monitoring schedule is detailed in the proposed permit under Condition S.2. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

A. Lab Accreditation

Ecology requires that facilities must use a laboratory registered or accredited under the provisions of chapter 173-50 WAC, *Accreditation of Environmental Laboratories* to prepare all monitoring data (with the exception of certain parameters).

V. OTHER PERMIT CONDITIONS

A. Reporting and Recordkeeping

Ecology based permit condition S3 on our authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-220-210).

B. Non Routine and Unanticipated Discharges

Occasionally, this facility may generate wastewater which was not characterized in the permit application because it is not a routine discharge and was not anticipated at the time of application. These wastes typically consist of waters used to pressure-test storage tanks or fire water systems or of leaks from drinking water systems.

The permit authorizes non-routine and unanticipated discharges under certain conditions. The facility must characterize these waste waters for pollutants and examine the opportunities for reuse. Depending on the nature and extent of pollutants in this wastewater and on any opportunities for reuse, Ecology may:

- Authorize the facility to discharge the wastewater.
- Require the facility to treat the wastewater.
- Require the facility to reuse the wastewater.

C. Spill Plan

This facility stores a quantity of chemicals on-site that have the potential to cause water pollution if accidentally released. Ecology can require a facility to develop best management plans to prevent this accidental release [section 402(a)(1) of the Federal Water Pollution Control Act (FWPCA) and RCW 90.48.080].

The proposed permit requires this facility to develop and implement a plan for preventing the accidental release of pollutants to state waters and for minimizing damages if such a spill occurs.

D. Solid Waste Control Plan

Darigold could cause pollution of the waters of the state through inappropriate disposal of solid waste or through the release of leachate from solid waste.

This proposed permit requires this facility to develop a solid waste control plan to prevent solid waste from causing pollution of waters of the state. The plan must be submitted to Ecology for approval (RCW 90.48.080).

This proposed permit requires this facility to update the approved solid waste control plan designed to prevent solid waste from causing pollution of waters of the state. The updated plan must be submitted to Ecology for approval (RCW 90.48.080).

E. Outfall Evaluation

Ecology requires Darigold to conduct an outfall inspection and submit a report detailing the findings of that inspection (proposed Permit Condition S.9). The facility must inspect its discharge pipe and diffusers to determine their physical condition, and to evaluate the extent of sediment accumulations in the vicinity of the outfall.

F. Treatment System Operating Plan

Ecology requires industries to take all reasonable steps to properly operate and maintain their wastewater treatment system in accordance with state and federal regulations (40 CFR 122.41(e) and WAC 173-220-150 (1)(g)). The facility will prepare and submit an operation and maintenance manual as required by state regulation for the construction of wastewater treatment facilities (WAC 173-240-150). Implementation of the procedures in the Treatment System Operating Plan ensures the facility's compliance with the terms and limits in the permit.

G. General Conditions

Ecology bases the standardized General Conditions on state and federal law and regulations. They are included in all individual industrial NPDES permits issued by Ecology.

VI. PERMIT ISSUANCE PROCEDURES

A. Permit Modifications

Ecology may modify this permit to impose numerical limits, if necessary to comply with water quality standards for surface waters, with sediment quality standards, or with water quality standards for ground waters, after obtaining new information from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

Ecology may also modify this permit to comply with new or amended state or federal regulations.

B. Proposed Permit Issuance

This proposed permit includes all statutory requirements for Ecology to authorize a wastewater discharge. The permit includes limits and conditions to protect human health and aquatic life, and the beneficial uses of waters of the state of Washington. Ecology proposes to issue this permit for a term of five years.

VII. REFERENCES FOR TEXT AND APPENDICES

Environmental Protection Agency (EPA)

1991. Technical Support Document for Water Quality-based Toxics Control. EPA/505/2-90-001.

1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington, D.C.

1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water. EPA/600/6-85/002a.

1983. Water Quality Standards Handbook. USEPA Office of Water, Washington, D.C.

Tsivoglou, E.C., and J.R. Wallace.

1972. Characterization of Stream Reaeration Capacity. EPA-R3-72-012. (Cited in EPA 1985 op.cit.)

Washington State Department of Ecology.

1994. Permit Writer's Manual. Publication Number 92-109

Washington State Department of Ecology.

2007. Focus Sheet on Solid Waste Control Plan, Developing a Solid Waste Control Plan for Industrial Wastewater Discharge Permittees. Publication Number 07-10-024

Washington State Department of Ecology.

Laws and Regulations(<http://www.ecy.wa.gov/laws-rules/index.html>)

Permit and Wastewater Related Information
(<http://www.ecy.wa.gov/programs/wq/wastewater/index.html>)

Wright, R.M., and A.J. McDonnell.

1979. In-stream Deoxygenation Rate Prediction. Journal Environmental Engineering Division, ASCE. 105(EE2). (Cited in EPA 1985 op.cit.)

APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

Ecology proposes to reissue a permit to Darigold, Inc. The permit prescribes operating conditions and wastewater discharge limits. This fact sheet describes the facility and Ecology's reasons for requiring permit conditions.

Ecology placed a Public Notice of Application on June 4, 2009, and June 11, 2009, in the *Chronicle* to inform the public about the submitted application and to invite comment on the reissuance of this permit.

Ecology will place a Public Notice on June 4, 2010, in the *Chronicle* to inform the public and to invite comment on the proposed reissuance of this National Pollutant Discharge Elimination System permit as drafted.

The Notice –

- Tells where copies of the draft Permit and Fact Sheet are available for public evaluation (a local public library, the closest Regional or Field Office, posted on our website.).
- Offers to provide the documents in an alternate format to accommodate special needs.
- Asks people to tell us how well the proposed permit would protect the receiving water.
- Invites people to suggest fairer conditions, limits, and requirements for the permit.
- Invites comments on Ecology's determination of compliance with antidegradation rules.
- Urges people to submit their comments, in writing, before the end of the comment period
- Tells how to request a public hearing about the proposed NPDES Permit.
- Explains the next step(s) in the permitting process.

Ecology has published a document entitled **Frequently Asked Questions about Effective Public Commenting** which is available on our website at <http://www.ecy.wa.gov/biblio/0307023.html>.

You may obtain further information from Ecology by telephone, **360-407-6280**, or by writing to the permit writer at the address listed below.

Water Quality Permit Coordinator
Department of Ecology
Southwest Regional Office
P. O. Box 47775
Olympia, WA 98504-7775

The primary author of this permit and fact sheet is **Aziz Mahar, P.E.**

APPENDIX B--GLOSSARY

1-DMax or 1-day maximum temperature--The highest water temperature reached on any given day. This measure can be obtained using calibrated maximum/minimum thermometers or continuous monitoring probes having sampling intervals of thirty minutes or less.

7-DADMax or 7-day average of the daily maximum temperatures--The arithmetic average of seven consecutive measures of daily maximum temperatures. The 7-DADMax for any individual day is calculated by averaging that day's daily maximum temperature with the daily maximum temperatures of the three days prior and the three days after that date.

Acute Toxicity--The lethal effect of a compound on an organism that occurs in a short period of time, usually 48 to 96 hours.

AKART--The acronym for "all known, available, and reasonable methods of prevention, control and treatment." AKART is a technology-based approach to limiting pollutants from wastewater discharges which requires an engineering judgment and an economic judgment. AKART must be applied to all wastes and contaminants prior to entry into waters of the state in accordance with RCW 90.48.010 and 520, WAC 173-200-030(2)(c)(ii), and WAC 173-216-110(1)(a).

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Annual Average Design Flow (AADF)--The average of the daily flow volumes anticipated to occur over a calendar year.

Average Monthly Discharge Limit--The average of the measured values obtained over a calendar month's time.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD₅--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD₅ is used in modeling to measure the reduction of dissolved oxygen in receiving waters after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of a treatment facility.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Chronic Toxicity--The effect of a compound on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean Water Act (CWA)--The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations. In addition it includes as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Ecology may conduct additional sampling.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite" (collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots).

Construction Activity--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Continuous Monitoring--Uninterrupted, unless otherwise noted in the permit.

Critical Condition--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Detection Limit--See Method Detection Level.

Dilution Factor (DF)--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the percent effluent fraction e.g., a dilution factor of 10 means the effluent comprises 10 percent by volume and the receiving water 90 percent.

Engineering Report--A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report must contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample--A single sample or measurement taken at a specific time or over as short a period of time as is feasible.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Major Facility--A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Maximum Daily Discharge Limit--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Maximum Day Design Flow (MDDF)--The largest volume of flow anticipated to occur during a one-day period, expressed as a daily average.

Maximum Month Design Flow (MMDF)--The largest volume of flow anticipated to occur during a continuous 30-day period, expressed as a daily average.

Maximum Week Design Flow (MWDF)--The largest volume of flow anticipated to occur during a continuous 7-day period, expressed as a daily average.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99 percent confidence that the pollutant concentration is above zero and is determined from analysis of a sample in a given matrix containing the pollutant.

Minor Facility--A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Mixing Zone--An area that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in state regulations (chapter 173-201A WAC).

National Pollutant Discharge Elimination System (NPDES)--The NPDES (Section 402 of the Clean Water Act) is the Federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the state of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both State and Federal laws.

pH--The pH of a liquid measures its acidity or alkalinity. It is the negative logarithm of the hydrogen ion concentration. A pH of 7.0 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Peak Hour Design Flow (PHDF)--The largest volume of flow anticipated to occur during a one-hour period, expressed as a daily or hourly average.

Peak Instantaneous Design Flow (PIDF)--The maximum anticipated instantaneous flow.

Quantitation Level (QL)--The smallest detectable concentration of analyte greater than the Detection Limit (DL) where the accuracy (precision & bias) achieves the objectives of the intended purpose. This may also be called Minimum Level or Reporting Level.

Reasonable Potential--A reasonable potential to cause a water quality violation, or loss of sensitive and/or important habitat.

Responsible Corporate Officer--A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or have gross annual sales or expenditures exceeding \$25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures (40 CFR 122.22).

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Suspended Solids (TSS)--Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to receiving waters may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Solid waste--All putrescible and non-putrescible solid and semisolid wastes including, but not limited to, garbage, rubbish, ashes, industrial wastes, swill, sewage sludge, demolition and construction wastes, abandoned vehicles or parts thereof, contaminated soils and contaminated dredged material, and recyclable materials.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Upset--An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limits because of factors beyond the reasonable control of the facility. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

Water Quality-based Effluent Limit--A limit on the concentration of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into receiving waters.

APPENDIX C--TECHNICAL CALCULATIONS

Several of the Excel® spreadsheet tools used to evaluate a discharger's ability to meet Washington State water quality standards can be found on Ecology's homepage at <http://www.ecy.wa.gov/programs/eap/pwspread/pwspread.html>.

APPENDIX D--RESPONSE TO COMMENTS